

WHAT IS TO BE CLAIMED:

1. A method for augmenting an immune response in a patient, comprising
 - (a) administering an amount of at least one composition comprising molecules having at least one IL-18 biological activity to the patient sufficient to generate an increase in the number of the patient's dendritic cells.
2. A method according to claim 1, further comprising
 - (b) administering at least one composition comprising at least one selected from the group consisting of flt3-ligand, GM-CSF, IL-4, TNF- α , IL-3, c-kit ligand, and fusions of GM-CSF and IL-3.
3. A method for augmenting an immune response in a patient having an infectious disease, comprising
 - (a) administering IL-18 to said patient in an amount sufficient to generate an increase in the number of the patient's dendritic cells.
4. A method according to claim 3, further comprising
 - (b) administering one or more of the molecules selected from the group consisting of flt3-ligand, GM-CSF, IL-4, TNF- α , IL-3, c-kit ligand, and fusions of GM-CSF and IL-3.
5. A method according to claim 3, wherein the infectious disease is HIV.
5. A method for augmenting an immune response in a patient having a cancerous or neoplastic disease, comprising
 - (a) administering IL-18 in an amount sufficient to generate an increase in the number of the patient's dendritic cells.
7. A method according to claim 6, further comprising the step of administering one or more of the molecules selected from the group consisting of flt3-ligand, GM-CSF, IL-4, TNF- α , IL-3, c-kit ligand, and fusions of GM-CSF and IL-3.
8. A preparation of dendritic cells having at least two cell surface markers selected from the group consisting of CD1a, HLA-DR and CD86, produced by contacting hematopoietic stem or progenitor cells with IL-18.
9. A dendritic cell preparation according to claim 8 produced further by contacting the hematopoietic stem or progenitor cells with a molecule selected from the group consisting of flt3-ligand, GM-CSF, IL-4, TNF- α , IL-3, c-kit ligand, and fusions of GM-CSF and IL-3.
10. An antigen-expressing dendritic cell population produced by the process of (a) contacting hematopoietic stem or progenitor cells with IL-18 in an amount sufficient to generate a dendritic

cell population; (b) either (i) exposing the dendritic cells to an antigen-specific peptide or (ii) transfecting the dendritic cells with a gene encoding an antigen-specific peptide; (c) allowing the dendritic cells to process and express the antigen; and (d) purifying the antigen-expressing dendritic cells.

- 5 11. A dendritic cell population according to claim 10 wherein step (a) of the process further comprises contacting the hematopoietic stem or progenitor cells with a molecule selected from the group consisting of GM-CSF, IL-4, TNF- α , IL-3, c-kit ligand, and fusions of GM-CSF and IL-3.
12. A method of driving hematopoietic stem or progenitor cells to a dendritic cell lineage comprising contacting such hematopoietic stem or progenitor cells with flt3-ligand.
- 10 13. A method of preparing an antigen-presenting dendritic cell population comprising the steps of: (a) contacting hematopoietic stem or progenitor cells with IL-18 in an amount sufficient to generate a dendritic cell population; (b) either (i) exposing the dendritic cells to an antigen-specific peptide or (ii) transfecting the dendritic cells with a gene encoding an antigen-specific peptide; (c) allowing the dendritic cells to process and express the antigen; and (d) purifying the antigen-expressing dendritic cells.
- 15 14. A method according to claim 13, wherein step (a) further comprises contacting the hematopoietic stem or progenitor cells with a molecule selected from the group consisting of flt3-ligand, GM-CSF, IL-4, TNF- α , IL-3, c-kit ligand, and fusions of GM-CSF and IL-3.
15. A method of preparing antigen-specific T cells comprising the steps of: (a) contacting
- 20 hematopoietic stem or progenitor cells with IL-18 in an amount sufficient to generate a dendritic cell population; (b) either (i) exposing the dendritic cells to an antigen-specific peptide or (ii) transfecting the dendritic cells with a gene encoding an antigen-specific peptide; (c) allowing the dendritic cells to process and express the antigen; and (d) allowing the dendritic cells to present the antigen to T cells.
- 25 16. A process of preparing a matured dendritic cell comprising:
- obtaining a sample of biological fluid containing stem-cells from a host;
- separating a stem cell-containing biological fluid sample into a substantially stem cell-depleted portion, and stem cell-enriched portion;
- culturing said stem cell-enriched portion with IL-18 to promote dendritic cell maturation; and
- 30 reinfusing said matured dendritic cells into said host.
17. A process of claim 16 wherein the separating step comprises:
- providing an additive and magnetic particles, wherein the additive binds to the stem cell and the magnetic particles bind the additive; and

separating the stem cell-containing biological fluid sample by applying a first and a second force, wherein the first force is a magnetic force and the second force is a mechanical force.

18. A composition containing IL-18 matured DC.

19. A method of administering a composition containing IL-18 matured DC comprising:

5 infusing a preparation of cells into a patient intravenously.